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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,051	09/13/2003	Michael K. Gallagher	51473	6724
21874	7590	07/15/2005	EXAMINER	
EDWARDS & ANGELL, LLP			CHEN, KIN CHAN	
P.O. BOX 55874			ART UNIT	
BOSTON, MA 02205			PAPER NUMBER	

1765

DATE MAILED: 07/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/661,051

Applicant(s)

GALLAGHER ET AL.

Examiner

Kin-Chan Chen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 14-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 090904; 102904
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of claims 1-13 in the reply filed on July 6, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the A porous overlayer 25 (e.g., on page 21, the second paragraph of specification) and the A porous overlayer 45 (e.g., on page 21, the third paragraph of specification) must be shown. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

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changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Besling et al. (US 6,562,732; hereinafter "Besling") in view of Odian (p.18, "Principles of Polymerization", 1981, second edition).

In a method of manufacturing a device, Besling teaches that a sacrificial material layer may be disposed on a device substrate. An overlayer (e.g., porous dielectric) material may be disposed on the sacrificial material layer. The sacrificial material layer may be removed to form an air gap. The sacrificial material layer may

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comprise a polymer (abstract; col. 2, lines 34-44; Figures). Besling teaches using a polymer as sacrificial material. The disclosure of Besling is not limited to any type of polymer. In the book of "Principles of Polymerization", Odian teaches that polymers may be linear, branched, or cross-linked polymers (p.18). Hence, it would have been obvious to one with ordinary skill in the art to use a cross-linked polymer in the process of Besling because it is one of the most popular polymers used in the industry and because it is taught by Odian.

The limitations of claims 1, 4, 6, 10, 11, 12, and 13 have been addressed above and rejected for the same reasons, supra.

As to claim 2, Besling teaches using a porous dielectric material as the overlay material, making an organic polysilica (organosilanes) material obvious because it is a well-known dielectric material in device fabrication.

As to claim 5, see col. 4, lines 4-5.

As to claim 8, see Figures.

As to claim 9, Besling teaches using polymer including UV photoresist material may be used as sacrificial material, making curing the sacrificial material composition for forming the sacrificial material obvious.

The above-cited claims differ from the prior art by specifying well-known features (such as cross-linked polymers in claims 3 and 7) to the art of device fabrication. It is the examiner's position that a person having ordinary skill in the art at the time of the claimed invention would have found it obvious to modify the prior art by

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adding any of same well-known features to same in order to fabricate an easily removable sacrificial material layer with a reasonable expectation of success.

Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Babich et al. (US 6,815,329; hereinafter "Babich") in view of Odian (p.18, "Principles of Polymerization", 1981, second edition).

In a method of manufacturing a device, Babich teaches that a sacrificial material layer may be disposed on a device substrate. An overlayer (e.g., porous dielectric) material may be disposed on the sacrificial material layer. The sacrificial material layer may be removed to form an air gap. The sacrificial material layer may comprise a polymer (col. 8 and 9; Figures). Babich teaches using a polymer as sacrificial material. The disclosure of Babich is not limited to any type of polymer. In the book of "Principles of Polymerization", Odian teaches that polymers may be linear, branched, or cross-linked polymers (p.18). Hence, it would have been obvious to one with ordinary skill in the art to use a cross-linked polymer in the process of Babich because it is one of the most popular polymers used in the industry and because it is taught by Odian.

The limitations of claims 1, 4, 6, 10, 11, 12, and 13 have been addressed above and rejected for the same reasons, supra.

As to claim 2, Babich teaches using a porous dielectric material as the overlay material, making an organic polysilica (organosilanes) material obvious because it is a well-known dielectric material in device fabrication (col.9, lines 41-58).

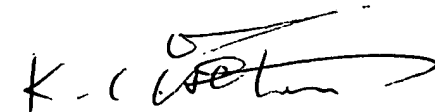
As to claim 5, see col. 8, lines 64-66.

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As to claim 8, see Figures.

The above-cited claims differ from the prior art by specifying well-known features (such as cross-linked polymers in claims 3 and 7; applying and curing a cross-linkable polymer in claim 9) to the art of device fabrication. It is the examiner's position that a person having ordinary skill in the art at the time of the claimed invention would have found it obvious to modify the prior art by adding any of same well-known features to same in order to fabricate an easily removable sacrificial material layer with a reasonable expectation of success.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kin-Chan Chen whose telephone number is (571) 272-1461. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kin-Chan Chen
Primary Examiner
AU 1765